What is claimed is:

1. A modified adenovirus comprising genomic adenoviral DNA which has been modified so that (i) the only gene product of the early region (E4) that is expressed is open reading frame 6 (ORF-6), (ii) neither the gene product of the E1A region nor the gene product of the E1B region is expressed, and (iii) no other early or late gene products are expressed.

2. The modified adenovirus of claim 1, further modified so that it expresses the gene product of the E1A region of the adenoviral DNA.

3. The modified adenovirus of claim 1, further modified so that it expresses the gene product of the E1B region of the adenoviral DNA.

4. The modified adenovirus of claim 1, further modified so that it expresses both (i) the gene product of the E1A region and (ii) the gene product of the E1B region of the adenoviral DNA.

5. The modified adenovirus of claim 1 designated VORF6 (ATCC Patent Deposit Designation Number PTA-2215).

6. A method of inhibiting repair of breaks in double-stranded DNA in a cell which comprises introducing into the cell the adenovirus of claim 1.

7. A method of preventing cancer in a subject which comprises introducing into a cell of the subject the adenovirus of claim 1.

8. A method of treating cancer in a subject which

comprises introducing into a cancer cell of the subject the adenovirus of claim 1.

9. A method of preventing concatamerization of a linear wild-type adenoviral DNA which comprises introducing into a cell comprising the wild-type adenoviral DNA, the adenovirus of claim 1.

10. A method of inhibiting V(D)J recombination of nucleic acid sequences encoding immunoglobulins in a cell of the immune system which comprises introducing into the cell, the adenovirus of claim 1.

11. A method of preventing in a cell apoptosis induced by viral DNA replication in the cell which comprises introducing into the cell, the adenovirus of claim 1.

12. A method of increasing efficiency of chemotherapeutic or radiation treatment of cancer in a subject which comprises: a) introducing into cancer cells of the subject the adenovirus of claim 1 and b) administering a chemotherapeutic agent or radiation to the subject.

13. The method of claim 12, wherein the adenovirus is introduced into the cancer cells before the chemotherapeutic agent or radiation is administered to the subject.

14. The method of claim 12, wherein the adenovirus is introduced into the cancer cells after the chemotherapeutic agent or radiation is administered to the subject.

15. The method of claim 12, wherein the adenovirus is introduced into the cancer cells concurrently with administering the chemotherapeutic agent or radiation to the subject.

16. The method of claim 12, wherein the chemotherapeutic agent is cisplatin or doxorubicin.